

In the claims:

For the Examiner's convenience, all pending claims are presented below with changes shown in accordance with the mandatory amendment format.

1. (Currently Amended) A system comprising:

a central processing unit (CPU) including power management logic to enable the CPU to execute a first quantity of instructions per cycle whenever the temperature of the CPU exceeds a predetermined threshold and to execute a second quantity of instructions per cycle whenever the temperature of the CPU is below the predetermined threshold,
wherein the power management logic includes an artificial activity generator to generate artificial activity within the CPU to minimize current spikes within the CPU; and
programmable array logic (PAL) to operate as an interrupt handler to control the CPU upon receiving an interrupt.

2. (Previously Presented) The system of claim 1 wherein the power

management logic comprises:

a thermal sensor;
a digital filter coupled to the thermal sensor; and
an interrupt generating hardware coupled to the digital filter, wherein the interrupt generating hardware generates a first interrupt whenever the temperature of the CPU exceeds the predetermined threshold and generates a second interrupt whenever the temperature of the CPU is below the predetermined threshold.

3. (Previously Presented) The system of claim 2 wherein the power management logic further comprises an analog to digital converter coupled between the thermal sensor and the digital filter.

4. (Canceled)

5. (Currently Amended) The system of claim 1 wherein the power management logic further comprises[[:]] an instruction execution unit coupled to the interrupt handler; ~~and an artificial activity generator coupled to the interrupt handler.~~

6. (Canceled)

7. (Currently Amended) The system of claim 5 wherein ~~an~~ the artificial activity generator suspends the artificial activity within the CPU whenever the die temperature is above the predetermined threshold temperature.

8. (Currently Amended) A method comprising:

determining whether the temperature of a central processing unit (CPU) exceeds a predetermined threshold;

generating an interrupt if the temperature of the CPU exceeds the predetermined threshold;

receiving the interrupt at programmable array logic (PAL), wherein the PAL controls the CPU upon receiving the interrupt;

transmitting a signal to the CPU indicating a first quantity of instructions per cycle;

executing the first quantity of instructions per cycle if the temperature of the CPU exceeds the predetermined threshold;

transmitting a signal to the CPU indicating a second quantity of instructions; and

executing the second quantity of instructions if the temperature of the CPU is below the predetermined threshold; and

entering an artificial activity mode to generate artificial activity within the CPU to minimize current spikes within the CPU.

9. (Currently Amended) The method of claim 8 further comprising:
interrupting ~~an~~ the artificial activity mode; and
transitioning from a full instruction execution mode to a single instruction execution mode.

10. (Previously Presented) The method of claim 9 further comprising:
suspending the execution of code at the CPU after generating the first interrupt;
and
resuming the execution of code at the CPU after transitioning to the single instruction execution mode.

11. (Previously Presented) The method of claim 10 further comprising:

determining whether the temperature of the CPU exceeds the predetermined threshold after transitioning to the single instruction execution mode; and terminating the operation of the CPU if the temperature of the CPU exceeds the predetermined threshold after transitioning to the single instruction execution mode.

12. (Previously Presented) The method of claim 10 further comprising:
determining whether the temperature of the CPU exceeds the predetermined threshold after transitioning to the single instruction execution mode; and generating a second interrupt if the CPU does not exceed the predetermined threshold after transitioning to the single instruction execution mode.

13. (Previously Presented) The method of claim 12 further comprising transitioning from the second execution mode to the first execution mode.

14. (Currently Amended) The method of claim 13 wherein the process of transitioning from the second execution mode to the first execution mode comprises:
resuming the artificial activity mode; and
transitioning from the single instruction execution mode to the full instruction execution mode.

15. (Previously Presented) The method of claim 12 wherein the first interrupt is a high temperature interrupt and the second interrupt is a normal temperature interrupt.

16. (Currently Amended) A central processing unit (CPU) comprising:

a thermal sensor; and

an instruction execution unit to receive a first signal from programmable array logic (PAL) indicating execution of a first quantity of instructions per cycle in a first execution mode whenever the thermal sensor measures temperature exceeding a predetermined threshold, and to receive a second signal from the PAL indicating execution of a second quantity of instructions per cycle in a second execution mode whenever the thermal sensor measures temperature below the predetermined threshold;

and

an artificial activity generator to generate artificial activity to minimize current spikes within the CPU.

17. (Previously Presented) The CPU of claim 16 further comprising:

interrupt generating hardware coupled to generate a first interrupt whenever the thermal sensor measures a temperature that exceeds the predetermined threshold and generates a second interrupt whenever the thermal sensor measures a temperature below the predetermined threshold.

18. (Cancelled)

19. (Previously Presented) The CPU of claim 18 wherein the artificial activity generator suspends artificial activity within the CPU whenever the die temperature is above the predetermined threshold temperature.

20-24. (Canceled)